Original scientific paper

Received: March 31, 2025.
Revised: July 17, 2025.
Accepted: July 21, 2025.

UDC:
37.091.64:004.738.5(497.11)"2024"
030:004.738.5
10.23947/2334-8496-2025-13-2-323-334

Check for updates

Exploring Wikipedia Usage in Primary School Education: Students' Experiences and Perspectives

Marko Stanković[1*], *Marija Tasić*[1], *Đorđe Stakić*[2], *Aleksandar Damjanović*[3]

[1]University of Niš, Pedagogical Faculty in Vranje, Vranje, Serbia, e-mail: markos@pfvr.ni.ac.rs, marijat@pfvr.ni.ac.rs
[2]University of Belgrade, Faculty of Economics and Business, Belgrade, Serbia, e-mail: djordje.stakic@ekof.bg.ac.rs
[3]Union University, Faculty of Computing, Belgrade, Serbia, e-mail: adamjanovic@raf.rs

Abstract: The rapid development of digital technologies and the accessibility of numerous online resources have significantly influenced contemporary education. Among these digital platforms, Wikipedia stands out as a widely visited and influential open-access online encyclopedia. While numerous studies have explored the use of Wikipedia in higher education, its potential in primary education remains underexamined. The purpose of this study is to investigate the opportunities for using Wikipedia in primary school education and to examine students' attitudes toward its use. The research was conducted on a sample of 364 seventh- and eighth-grade primary school students. A questionnaire was designed to assess students' opinions on the application of Wikipedia in educational contexts. Students were divided into two groups: one group used Wikipedia for lesson processing, while the other followed a traditional approach. Using the multivariate Kruskal-Wallis test and descriptive statistics, the results revealed that students hold slightly positive views on the use of Wikipedia in education, regardless of gender, grade level, academic performance, or prior classroom use of Wikipedia. Furthermore, the findings indicate that students in higher grades have experience using Wikipedia, though they generally lack formal exposure to it in classroom settings. Despite this, students frequently use Wikipedia for verifying information and completing homework, demonstrating openness to its integration into the educational process. This study highlights the potential for enhancing teaching practices in primary education by incorporating widely used digital information sources like Wikipedia.

Keywords: *Wikipedia in education, primary school education, students' attitudes, modernization of teaching.*

Introduction

Wikipedia is the largest and most widely used online encyclopedia, providing a multilingual platform for the collaborative creation and dissemination of knowledge. Due to its global openness and free access, Wikipedia is often considered an inclusive and democratic educational resource. As one of the most visited websites worldwide (Similarweb, 2025), it consistently ranks among the top search results, making it a highly accessible and influential information source (McDowell and Vetter, 2021). Wikipedia has become a global repository of human knowledge, offering an ever-expanding digital archive across diverse disciplines. While its scope and accessibility are undeniable strengths, they also give rise to certain challenges and criticisms, particularly regarding the reliability and quality of its content.

Despite its widespread use, Wikipedia has faced persistent criticism from the research and education communities, primarily due to concerns about the open-editing model, where anyone—including anonymous non-experts—can contribute. This often raises questions about academic credibility, as the absence of a formal peer-review process can lead to inconsistent quality, incomplete articles, and the occasional spread of misinformation. This open-access approach results in articles of varying quality, with some entries remaining incomplete, unsourced, or vulnerable to vandalism. The absence of a formal peer-review mechanism further exacerbates these issues, making it difficult to ensure the consistency and

*Corresponding author: markos@pfvr.ni.ac.rs

© 2025 by the authors. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (https://creativecommons.org/licenses/by/4.0/).

accuracy of the information presented (Christensen, 2015; Reinsalu et al., 2023). Teachers often express apprehension that students use Wikipedia as a primary source without critically evaluating its content or seeking alternative references (García-Delgado Giménez and Pinto Tortosa, 2024). Both teachers and students exhibit a lack of trust and a critical stance toward the platform. However, some initiatives have demonstrated the potential for improving the trustworthiness of Wikipedia through targeted educational interventions. For example, a study by Dudić et al. (2024) highlights efforts by Wikimedia Serbia to promote digital literacy and proper referencing among students, showing a significant improvement in students' understanding of trust mechanisms and responsible content creation on the platform. Moreover, research suggests that trust in Wikipedia varies depending on the level of education (Mothe and Sahut, 2018). Additionally, the platform has been criticized for systemic biases and imbalanced coverage, particularly in underrepresented sociocultural topics, which questions its aspiration to be a truly comprehensive and impartial repository of human knowledge.

Despite the criticisms surrounding Wikipedia's open-editing model, numerous studies highlight its significant pedagogical potential when integrated thoughtfully into the educational process. Wikipedia can serve as a powerful teaching tool by fostering active learning, enhancing student engagement, and promoting collaboration within study groups. Its application in the classroom supports the development of academic literacy (Azar, 2023; Bröcher et al., 2023; Evenstein Sigalov et al., 2024), as students improve their information retrieval and critical reading skills while participating in collaborative content creation. Moreover, Wikipedia-based assignments offer an authentic learning experience, allowing students to contribute to a global knowledge base while refining their research and writing abilities. This approach demands a purposeful integration by educators, ensuring that students not only consume information but also engage with it critically and responsibly.

In addition to Wikipedia, several sister projects (Commons, MediaWiki, Wikibooks, Wikidata, Wikiquote, Wikispecies, Wikiversity, Wiktionary, etc.) within the Wikimedia movement demonstrate significant potential for academic use. Among the most prominent is Wikidata, a free, multilingual, and open knowledge base that stores structured, linked data. For example, Wikidata, the largest semantic knowledge base in existence, offers unique learning opportunities (Evenstein Sigalov and Nachmias, 2023). Local initiatives also play an important role; for instance, the Wiki-librarian project (supported by Wikimedia Serbia) aims at training librarians and students of librarianship and information science to work with Wikipedia and other Wikimedia tools, enhancing digital literacy and contributing to the quality and expansion of Serbian Wikipedia's content (Stakić et al., 2021b). Similarly, the Professional Development of Teachers project (Ratković and Rudinac, 2023) focuses on equipping teachers from provincial areas with the skills needed to implement Wiki-projects in their schools, thereby promoting equity in access to open knowledge and fostering critical engagement with online information.

In order to better understand the educational potential of Wikipedia, it is important to consider relevant studies and initiatives from both Serbia and other countries. Comprehensive details on educational initiatives in Serbia are available at (Wikimedia Education - Serbia, n.d.). The following paragraphs provide an overview of significant projects and research conducted at different educational levels—higher, secondary, and primary education—which set the foundation for our study.

Regarding the integration of Wikipedia into higher education, the Wikipedia Education Program represents a global effort to incorporate Wikipedia into university classrooms. Davis et al. (2023) demonstrate its positive impact through case studies from Serbia, Israel, the United States/Canada, and Brazil, illustrating how Wikipedia-based activities can enhance student engagement and foster interdisciplinary collaboration. In Serbia, the Wiki Student project aims to integrate Wikipedia into higher education by engaging students in writing term papers on topics related to their university courses. Findings from this project indicate that faculty students generally hold positive attitudes toward Wikipedia's use in education, as shown in the study by Stakić et al. (2021a), which highlights its potential to innovate and enrich the learning process. Globally, numerous studies highlight Wikipedia's educational potential in higher education including Petrucco (2018), Zou et al. (2020), Cardoso and Pestana (2020), Malik et al. (2023), Sunvy and Reza (2023), Arslan and Turk (2024), Evenstein Sigalov et al. (2024), and many others.

Concerning high school education, Wikipedia has also proven to be a valuable educational tool with significant learning potential, as confirmed by numerous studies, such as Blikstad-Balas (2016) and Reinsalu et al. (2023). In Serbia, the Wiki Gymnasium project is specifically designed for high school students and teachers, aiming to familiarize them with Wikipedia's significance, benefits, and editing process. The

project encourages teachers to integrate Wikipedia into their teaching by assigning students to write term papers on subjects such as geography, history, and biology. Moreover, research conducted within these workshops has provided valuable insights into the educational potential of Wikipedia (Dudić et al., 2024).

There is also potential for integrating Wikipedia into primary education. A notable example is the Txikipedia project, a sub-project of the Basque Wikipedia aimed at children aged 8 to 13, offering simplified content primarily focused on mathematics and natural sciences. The study by Iribas Pardo et al. (2022) examined the appropriateness of mathematical content created for Txikipedia, showing that primary school students benefit from reading its textual and audiovisual materials, highlighting the role of digital humanities in enhancing mathematics education. In Serbia, the Wiki Schooler project serves as an initiative for introducing Wikipedia to primary school students and their teachers. The project has been implemented in several schools over the years, involving activities such as writing and editing Wikipedia pages on age-appropriate topics. However, compared to Wiki Student and Wiki Gymnasium, the engagement with Wikipedia at the primary school level has been more limited, both in terms of the number of participating institutions and the volume of content produced.

Since the use of Wikipedia in primary education has been the least explored, this study focuses specifically on examining its potential in that context. The research is conducted among 7th and 8th-grade students, aiming to determine how often they use Wikipedia and whether they recognize its educational potential. We explore whether students have previously used Wikipedia in their classes, for homework assignments, and for verifying information, assessing their perceptions of its applicability in the learning process.

Materials and Methods

Participants

The sample consisted of 364 students from Radoje Domanović Primary School and Vuk Karadžić Primary School in Vranje, Serbia, including 103 seventh-grade students and 261 eighth-grade students. It is important to note that the primary education system in Serbia consists of preschool education and eight years of primary school, meaning that the participants were in the final two grades of primary school. Students typically enroll in primary school between the ages of 6.5 and 7.5 years, so the participants in this study were approximately 14 to 15 years old.

The sample included students who attended either Civic Education or English Language classes. The students were divided into two groups. The first group of 214 students studied the lessons for the mentioned subjects in a traditional manner according to the curriculum. This group could have been surveyed at a random point during the study, independent of the lessons, but they were surveyed immediately at the beginning.

The second group of 150 students used Wikipedia as part of their lessons for the mentioned subjects, specifically during one class session. For example, students were allowed to consult Wikipedia during discussions to find answers, verify facts, etc. No prior training was provided on using Wikipedia; students used it as they were already familiar with it. During one of the following regular classes, these students filled out a questionnaire. Finally, the obtained data were statistically processed.

Research Design and Instruments

The research was conducted during February 2024, which corresponds to the beginning of the second term in the Serbian primary school system. The questionnaire was designed to evaluate the extent to which students use Wikipedia, whether they use it as part of their learning process, and to examine their attitudes toward using Wikipedia in primary school classrooms.

The data collection was conducted using the survey method, with an anonymous questionnaire as the primary instrument. This questionnaire was specifically developed for the purposes of this study and included items addressing all three research hypotheses. Participants' attitudes were measured using a five-point Likert scale, ranging from "completely disagree" to "completely agree". The questions aimed to assess students' familiarity with Wikipedia, their use of it in the learning process, and their perspectives on integrating Wikipedia into classroom activities in primary schools. Quantitative data obtained through the rating scale were processed using the SPSS statistical software. The analysis of the results employed

descriptive statistics, the multivariate Kruskal-Wallis test (MKW), and the Wilcoxon signed-rank test. The research findings are presented both in textual form and through tables.

Research Aims and Research Hypotheses

The aim of this research was to explore students' attitudes towards the use of Wikipedia in their learning process, both as a source of information and as an educational tool. The specific objectives of the study were:

1. To explore students' attitudes toward using Wikipedia in the classroom and examine whether these attitudes show statistically significant differences based on independent variables such as gender, grade level, and grade point average.
2. To determine whether students in higher grades of primary school use Wikipedia.
3. To examine whether students have prior experience with using Wikipedia in formal educational settings.

The General Hypothesis of the study posited that students have a positive attitude towards the use of Wikipedia in the learning process, both as an information source and as a teaching aid. Specific hypotheses:

H1: Students are open to the use of Wikipedia as part of classroom instruction and there are no significant differences in students' attitudes towards Wikipedia based on independent variables such as gender, grade level, or grade point average.

H2: Students in the higher grades of primary school have experience using Wikipedia.

H3: Students do not have prior experience with using Wikipedia in formal teaching.

Research Variables

The structure of the research required categorizing the variables into independent and dependent ones. The independent variables in this study were gender, grade level, grade point average and integration of Wikipedia into the educational process.

"Gender" refers to the potential differences in attitudes towards the use of Wikipedia between male and female students. Research consistently highlights a significant gender gap in Wikipedia engagement. For instance, a study on the Spanish Wikipedia revealed that only 11.6% of editors are women, with men outnumbering women by at least a 3:1 ratio across all Wikipedia sections (Minguillón et al., 2021). Additionally, global research on Wikipedia readership shows that women are underrepresented among readers, viewing fewer pages per session compared to men (Johnson et al., 2021). This trend is also reflected in local studies on the Serbian Wikipedia, which show similar gender disparities (Maljković, 2015). These findings suggest the importance of examining gender differences in students' attitudes towards Wikipedia's educational use.

"Grade level" is used to explore differences in attitudes between 7th- and 8th-grade students. As students progress through the final years of primary education, their familiarity with online resources and digital tools typically increases. Dúo-Terrón et al. (2022) similarly found that students' engagement and motivation toward information and communication technology (ICT) were influenced by their age and grade level, with sixth-grade students showing medium-to-high levels of ICT use. This suggests that grade level may play a significant role in shaping students' attitudes toward digital resources like Wikipedia.

"Grade point average" serves to assess whether students with higher academic performance are more inclined to view Wikipedia as a valuable tool in the learning process. This variable aims to determine whether students with better grades are more likely to embrace Wikipedia's inclusion in classroom instruction. The sample is divided into four groups based on students' previous year performance: 2.00–2.49 (sufficient), 2.50–3.49 (good), 3.50–4.49 (very good), and 4.50–5.00 (excellent). This grading system is a standard in Serbia. In a previous study by Stakić et al. (2021a), it was shown that grade point average does not influence university students' positive attitudes toward the use of Wikipedia in teaching. On the other hand, the study by Pavlović et al. (2017) reported statistically significant differences in university students' responses regarding their motivations for using Wikipedia based on their grade point average. The discrepancy in these findings may be attributed to the specific methodologies and sample characteristics of each study. Nevertheless, the importance of grade point average as a factor influencing students' attitudes toward educational tools remains evident, making it an important variable for further research, especially in the context of primary school education.

"Wikipedia integration": This variable distinguishes between two groups of students based on their exposure to Wikipedia during classroom instruction. The first group followed traditional teaching methods without the use of Wikipedia, while the second group incorporated Wikipedia into their lessons, using it to consult information, verify facts, and participate in discussions. This variable allows us to observe whether the integration of Wikipedia as a learning tool influences students' attitudes and perceptions.

The dependent variable in this study was the students' attitudes towards the integration of Wikipedia into the educational process. The research focused on analyzing the relationship between these independent variables (gender, grade level, and grade point average) and the dependent variable, i.e., students' attitudes towards the use of Wikipedia in teaching.

Results

The research results are presented separately, organized according to the proposed hypotheses. The presentation begins with the most significant hypothesis.

Hypothesis 1

Hypothesis H1 examines students' openness to the use of Wikipedia as part of classroom instruction. To test this hypothesis, we used the following statements:

Statement 1.1: *I eagerly use Wikipedia content for learning*.
Statement 1.2: *I think lessons would be more interesting if they were conducted with the help of Wikipedia.*
Statement 1.3: *I believe that textbook content should be supplemented with information from Wikipedia.*
Statement 1.4: *I believe that Wikipedia cannot be adequately used for teaching and learning purposes.* (*Reverse-coded*)

To test this hypothesis, we used the MKW version proposed by Katz and McSweeney (1980). There are two reasons why this test is suitable for hypothesis testing. First, it allows control over the alpha risk of the study, i.e., the risk of making an incorrect conclusion by rejecting the null hypothesis H_0 when it is true. Additionally, individual tests tend to overlook the interaction effects of different treatment factors. The results are presented in Table 1. MKW Results for All Factors Combined and Individually. Overall, the results indicate no statistically significant differences in students' responses to the four statements across the given factors (gender, grade level, academic performance and integration of Wikipedia into the educational process). Even when the MKW test is applied separately for each factor, no statistically significant differences are observed (all p-values are greater than 0.05, supporting the null hypothesis H_0 that there are no differences in responses). In other words, students' attitudes remain consistent regardless of gender, grade level, academic performance, or whether they used Wikipedia in classroom.

The variable of average grade shows a slightly lower p-value (0.081857) compared to the others, though it still does not reach the threshold for statistical significance ($p < 0.05$). This suggests a potential but not confirmed trend where students' academic performance may slightly influence their attitudes toward Wikipedia's use in learning, but more investigation would be required to establish a clearer relationship.

Table 1. *MKW Results for All Factors Combined and Individually*

Grouping variable	MKW Statistic	Number of groups (k)	p-value
All	101.9408	32	0.14695
Gender	2.474488	2	0.64921
Grade level	4.653141	2	0.324773
Average grade	19.28598	4	0.081857
Wikipedia integration	3.483216	2	0.480435

Despite the lack of statistical significance for variable "Wikipedia integration", students appear to have slightly positive views on the use of Wikipedia in education (Table 2. Distribution of Responses to Statements Assessing Students' Openness Towards Using Wikipedia in Classroom Instruction presents the distribution of responses). For instance, 52% of students either "Agree" or "Completely agree" with Statement 1.1 ("I eagerly use Wikipedia content for learning"), indicating a general willingness to incorpo-

rate Wikipedia into their study practices. The median response of 4 and the mode of 4 reinforce this positive trend. Statement 1.2 ("I think lessons would be more interesting if they were conducted with the help of Wikipedia") received a more mixed response, with 45.1% of students agreeing or completely agreeing. The median and mode responses of 3 suggest a more neutral attitude overall, yet a considerable portion of students still see potential for enhancing lesson engagement through Wikipedia. A similar pattern emerges with Statement 1.3 ("I believe that textbook content should be supplemented with information from Wikipedia"), where 44.5% of students expressed agreement. The median and mode of 3 again reflect a balance of opinions, suggesting that while many students see value in Wikipedia as a supplementary resource, there remains some hesitation. The reverse-coded Statement 1.4 ("I believe that Wikipedia cannot be adequately used for teaching and learning purposes") reveals a more cautious perspective on Wikipedia's reliability. Here, 42% of students either "Disagree" or "Completely disagree", indicating a notable portion of students who believe Wikipedia can indeed serve as a useful educational tool.

Table 2. *Distribution of Responses to Statements Assessing Students' Openness Towards Using Wikipedia in Classroom Instruction*

Statements		Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree	Average	Median	Mode
I eagerly use Wikipedia content for learning	N	28	47	100	104	85	3.47	4	4
	%	7.7	12.9	27.5	28.6	23.4			
I think lessons would be more interesting if they were conducted with the help of Wikipedia	N	23	57	120	96	68	3.35	3	3
	%	6.3	15.7	33	26.4	18.7			
I believe that textbook content should be supplemented with information from Wikipedia	N	28	54	120	90	72	3.34	3	3
	%	7.7	14.8	33	24.7	19.8			
I believe that Wikipedia cannot be adequately used for teaching and learning purposes	N	58	95	132	65	14	2.68	3	3
	%	15.9	26.1	36.3	17.9	3.9			

Hypothesis 2

Hypothesis H2 states that students in the higher grades of primary school have experience using Wikipedia. This hypothesis was tested through four statements designed to capture students' frequency and purpose of Wikipedia usage:

Statement 2.1: *I frequently use Wikipedia.*

Statement 2.2: *I mostly use Wikipedia to verify various data.*

Statement 2.3: *I use Wikipedia as the main source of information whenever I encounter an unfamiliar term.*

Statement 2.4: *I do not use Wikipedia or use it very rarely.* (*Reverse-coded*)

The first statement was selected as the primary indicator for testing this hypothesis. A Wilcoxon signed-rank test was conducted to determine whether the median response was greater than 3 (H_0: Me ≤ 3). This test distinguishes between neutral or negative attitudes and positive attitudes toward frequent Wikipedia usage. The results are presented in Table 3 . Results of the Wilcoxon Signed-Rank Test for Frequent Wikipedia Usage yielding a Wilcoxon statistic of 22520, a median of 4, a p-value of 0.000, and a Cohen's r of 0.2993. As the null hypothesis was rejected, we can assert that the population median is greater than 3, indicating that students frequently use Wikipedia.

Table 3 . *Results of the Wilcoxon Signed-Rank Test for Frequent Wikipedia Usage*

Statement	Wilcoxon	Median	p-value	Cohen r
I frequently use Wikipedia	22520	4	0	0.2993

The Wilcoxon signed-rank test is a non-parametric test used to compare the median of a sample to an expected value—in this case, whether the median response is greater than 3. The Wilcoxon statistic (22520) is the calculated value of the test, which helps derive the p-value. The median response of 4 indicates that most students provided answers above the neutral value of 3, suggesting a positive attitude toward frequent Wikipedia use. The p-value of 0.000 (interpreted as <0.001) demonstrates a very low probability that this result occurred by chance, leading to the rejection of the null hypothesis and supporting the claim that students frequently use Wikipedia. Cohen's r of 0.2993 measures the effect size, showing a moderate strength of this positive tendency toward Wikipedia usage.

The descriptive statistics of all four statements provide additional insight into students' experiences with Wikipedia (see Table 4. Distribution of Responses to Statements Assessing Students' Experience with Wikipedia Usage for details). For Statement 2.1, 52.5% of students agreed or completely agreed that they frequently use Wikipedia, with a median of 4 and a mode of 4. This suggests a general tendency toward frequent usage. Statement 2.2 ("I mostly use Wikipedia to verify various data") received the most affirmative responses, with 80.2% of students agreeing or completely agreeing. The median response of 4 and a mode of 5 further emphasize the role of Wikipedia as a tool for data verification. Statement 2.3 ("I use Wikipedia as the main source of information whenever I encounter an unfamiliar term") also reflects a positive inclination, with 66.8% of students agreeing or completely agreeing. The median and mode responses of 4 and 5, respectively, suggest that a significant proportion of students rely on Wikipedia as their primary informational resource. In contrast, the reverse-coded Statement 2.4 ("I do not use Wikipedia or use it very rarely") shows a less favorable stance toward infrequent usage. Only 21.1% of students agreed or completely agreed with this statement, whereas 48.9% disagreed or completely disagreed. The average score of 2.6 and a median and mode of 3 indicate a balanced perspective with a slight tendency toward disagreement. These findings collectively support the hypothesis that students in the higher grades of primary school have substantial experience using Wikipedia, both as a general informational resource and as a means of verifying data.

Table 4. *Distribution of Responses to Statements Assessing Students' Experience with Wikipedia Usage*

Statements		Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree	Average	Median	Mode
I frequently use Wikipedia	N	16	32	125	144	47	3.48	4	4
	%	4.4	8.8	34.3	39.6	12.9			
I mostly use Wikipedia to verify various data	N	13	19	40	134	158	4.11	4	5
	%	3.6	5.2	11	36.8	43.4			
I use Wikipedia as the main source of information whenever I encounter an unfamiliar term	N	16	18	87	107	136	3.9	4	5
	%	4.4	4.9	23.9	29.4	37.4			
I do not use Wikipedia or use it very rarely	N	75	103	109	46	31	2.6	3	3
	%	20.6	28.3	29.9	12.6	8.5			

Hypothesis 3

Hypothesis H3 states that students do not have prior experience with using Wikipedia in formal teaching. This hypothesis was tested through four statements designed to capture students' experiences and opportunities for using Wikipedia in educational contexts:

Statement 3.1: *I often find myself in a situation where we discuss Wikipedia content in class*.

Statement 3.2: *Teachers have directed us to Wikipedia as a source of information for learning*.

Statement 3.3: *I frequently use Wikipedia as an additional source of information when doing homework or other tasks.*

Statement 3.4: *I have not had the opportunity to use Wikipedia for teaching and learning purposes*.

The first statement was selected as the primary indicator for testing this hypothesis. Again, the Wilcoxon signed-rank test was conducted to determine whether the median response was greater than 3 (H_0: Me ≤ 3). Analogously, the test distinguishes between neutral or negative attitudes and positive at-

titudes toward discussing Wikipedia content in class. The results are presented in Table 5. Results of the Wilcoxon Signed-Rank Test for Students' Discussion of Wikipedia Content in Class, yielding a Wilcoxon statistic of 7239, a median of 2, a p-value of 1, and no calculable Cohen's r.

Table 5. *Results of the Wilcoxon Signed-Rank Test for Students' Discussion of Wikipedia Content in Class*

Statement	Wilcoxon	Median	p-value	Cohen r
I often find myself in a situation where we discuss Wikipedia content in class	7239	2	1	-

The median response of 2 indicates that most students provided answers below the neutral value of 3, suggesting a lack of classroom discussions involving Wikipedia content. The p-value of 1 suggests no statistical significance, leading to the acceptance of the null hypothesis and supporting the claim that students generally do not discuss Wikipedia content in class.

The descriptive statistics of all four statements provide additional insight into students' experiences with Wikipedia in formal teaching. Table 6. Distribution of Responses to Statements Assessing Students' Experience with Wikipedia in Formal Education presents the distribution of responses for all four statements assessing students' experiences with Wikipedia in formal teaching. For Statement 3.1 ("I often find myself in a situation where we discuss Wikipedia content in class"), the majority of students expressed disagreement, with 33% completely disagreeing and 25.8% disagreeing. The median response of 2 and mode of 1 confirm the rarity of such discussions. Statement 3.2 ("Teachers have directed us to Wikipedia as a source of information for learning") received a more balanced set of responses, with 22.5% agreeing and 11% completely agreeing, while 20% completely disagreed. The median and mode responses of 3 reflect a neutral stance.

In contrast, Statement 3.3 ("I frequently use Wikipedia as an additional source of information when doing homework or other tasks") shows a more positive tendency, with 35.2% agreeing and 22.5% completely agreeing. The median and mode of 4 suggest that students often turn to Wikipedia for individual learning purposes. Finally, the reverse-coded Statement 3.4 ("I have not had the opportunity to use Wikipedia for teaching and learning purposes") aligns with the hypothesis, as 30.5% completely disagreed and 26.9% disagreed. The median and mode of 2 indicate that many students acknowledge some opportunities for using Wikipedia, albeit infrequently. These findings collectively support the hypothesis that students generally lack formal classroom experience with Wikipedia, though they frequently use it for individual learning and homework support.

Table 6. *Distribution of Responses to Statements Assessing Students' Experience with Wikipedia in Formal Education*

Statements		Completely disagree	Disagree	Neither agree nor disagree	Agree	Completely agree	Average	Median	Mode
I often find myself in a situation where we discuss Wikipedia content in class	N	120	94	84	48	18	2.31	2	1
	%	33	25.8	23.1	13.2	4.9			
Teachers have directed us to Wikipedia as a source of information for learning	N	73	75	94	82	40	2.95	3	3
	%	20	20.6	25.8	22.5	11			
I frequently use Wikipedia as an additional source of information when doing homework or other tasks	N	20	51	83	128	82	3.55	4	4
	%	5.5	14	22.8	35.2	22.5			
I have not had the opportunity to use Wikipedia for teaching and learning purposes	N	111	98	96	41	18	2.33	2	1
	%	30.5	26.9	26.4	11.3	4.9			

Discussions

The results obtained from this research cannot be generalized, as the sample size could have been larger and more representative. Additionally, the study was conducted in Vranje, a small town in southern Serbia, one of the country's least developed regions, and the socio-economic background of the participants was not considered in this research. These factors may influence the attitudes and experiences of students, suggesting the need for broader, more diverse sampling in future studies.

The results of testing H1 indicate that students' attitudes remain consistent regardless of gender, grade level, academic performance, or whether they used Wikipedia in classroom instruction. The absence of differences in attitudes based on gender, grade level, average grade, or previous exposure to Wikipedia-based lessons can be interpreted in several ways. Although previous studies with university students have shown mixed findings—some indicating gender-based differences (Remmik et al., 2024) and others not (Stakić et al., 2021a)—no such differences were observed in this study. Similarly, there were no differences in attitudes based on grade level. Given that the participants were 7th and 8th-grade students, their closeness in age likely contributes to the uniformity of their responses.

It is worth noting that the variable of average grade shows a slightly lower p-value (0.081857) compared to the others, though it still does not reach the threshold for statistical significance ($p < 0.05$). This suggests a potential but not yet confirmed trend where students' academic performance may slightly influence their attitudes toward Wikipedia's use in learning. Further investigation with larger and more diverse samples could help establish a clearer relationship, especially at higher levels of education.

An intriguing finding is the lack of change in students' attitudes despite their engagement with lessons where Wikipedia was used as a resource. This may be influenced by the choice of subjects—English and Civic Education—which may not be the most suitable for demonstrating Wikipedia's full educational potential. A subject-specific analysis would likely provide more nuanced insights. Additionally, only one lesson was covered in each subject, which may have been insufficient for students to fully experience Wikipedia's usefulness, especially if the lesson content did not require extensive use of the platform.

Moreover, students did not receive any formal training on how to use Wikipedia effectively. Training and contribution to Wikipedia could play a crucial role in shaping students' perceptions, as it would allow them to explore Wikipedia's possibilities and its potential for classroom learning more comprehensively (see Soler-Adillon, Pavlovic and Freixa, 2018). These factors likely contribute to the observed uniformity in attitudes.

On the other hand, these results open up multiple avenues for future research. Investigating how students' perceptions evolve with more extensive and subject-specific integration of Wikipedia, examining the impact of formal training, and exploring the role of socio-economic factors could provide a deeper understanding of Wikipedia's educational potential.

The results of testing H2 indicate that students in the higher grades of primary school have experience using Wikipedia. The high frequency of Wikipedia usage among students can be interpreted in several ways. First, it aligns with global trends indicating that Wikipedia is one of the most widely used online knowledge resources. Students' reliance on Wikipedia for verifying data and understanding unfamiliar terms highlights the platform's perceived credibility and accessibility. This suggests that Wikipedia has already established itself as an essential part of students' informal learning practices, even when not directly integrated into classroom instruction. However, the results also open up questions about the depth and quality of students' engagement with Wikipedia. While the frequency of use is evident, it remains unclear how critically students approach the information they find there or whether they cross-reference it with other sources. Future research could explore students' information literacy skills and their ability to evaluate the reliability of Wikipedia content.

Moreover, the reverse-coded statement (Statement 2.4) indicating rare or no Wikipedia use received low agreement, further reinforcing the overall positive attitude toward the platform. This consistency across multiple indicators strengthens the conclusion that Wikipedia is already a familiar and frequently used tool among primary school students, making it a promising resource for more structured educational integration.

The results of testing H3, indicate that students generally lack formal classroom experience with Wikipedia. Discussions involving Wikipedia content are rare in classroom settings. Descriptive statistics further reinforce this, as the majority of students expressed disagreement with statements about using

Wikipedia as a teaching resource. However, the data also reveal an interesting contrast: while Wikipedia is rarely incorporated into formal instruction, students frequently use it as an additional source for homework and independent learning, which is consistent with findings by Blikstad-Balas (2016). The positive responses to Statement 3.3 highlight this tendency, suggesting that students recognize Wikipedia's value and reliability outside the classroom context. This discrepancy points to a clear gap between students' informal learning habits and classroom practices. It suggests an opportunity for educators to better integrate Wikipedia into teaching strategies, aligning instruction with students' existing digital literacy practices. Greater teacher involvement and structured guidance on using Wikipedia could enhance its educational potential and foster more critical engagement with online information sources.

Conclusions

This study explored the attitudes and experiences of 7th- and 8th-grade primary school students toward the use of Wikipedia in education. The results showed that students generally hold slightly positive views on Wikipedia's educational use, regardless of gender, grade level, academic performance, or whether they have used Wikipedia as part of classroom instruction. While students frequently use Wikipedia for verifying information and completing homework, their formal exposure to it in classroom settings remains limited. These findings highlight an opportunity to better align teaching practices with students' existing learning habits by integrating widely used digital resources like Wikipedia. Moreover, the results are encouraging for initiatives such as the Wiki Schooler project, suggesting that structured efforts to introduce Wikipedia into primary education could resonate well with students' existing digital behaviors. By formalizing Wikipedia-based activities in the classroom, educators may enhance students' information literacy and critical thinking skills from an early age.

Furthermore, these findings align with previous research on Wikipedia's role in education, particularly in secondary and higher education. However, this study expands on existing literature by focusing on primary school students—an area that remains relatively underexplored. Given the growing importance of digital resources in early education, future research could further investigate the subject-specific benefits of Wikipedia integration, as well as the role of teacher training in maximizing its educational potential.

Acknowledgements

The authors would like to thank all the participants who completed the survey and express their sincere appreciation to primary school teacher Olgica Pešić Đorđević for her invaluable assistance in conducting the survey.

The authors are supported by the Ministry of Science, Technological Development and Innovation, Republic of Serbia. The first author acknowledges support under Contract No. 451-03-136/2025-03/200139, the second author acknowledges support under Contract No. 451-03-137/2025-03/200139, and the third author acknowledges support under Contract No. 451-03-137/2025-03/200097.

Conflict of interests

The authors declare no conflict of interest.

Author Contributions

Conceptualization, M.S., M.T. and Đ.S.; methodology, M.S., M.T., Đ.S. and A.D.; software, A.D.; formal analysis, M.S., M.T., Đ.S. and A.D.; writing—original draft preparation, M.S.; writing—review and editing, M.S., M.T. and Đ.S.; supervision, M.S. All authors have read and agreed to the published version of the manuscript.

References

Arslan, A., & Turk, M. (2024). Wikipedia as an academic service-learning tool in science and technology: higher education case from Siberia. *Journal of Community Genetics*, *15*(2), 147–161. https://doi.org/10.1007/s12687-023-00692-6

Azar, T. (2023). Wikipedia: One of the last, best internet spaces for teaching digital literacy, public writing, and research skills in first year composition. *Computers and Composition, 68,* 102774. https://doi.org/10.1016/j.compcom.2023.102774

Bidegain, E., Egaña, T., & Zuberogoitia, A. (2024). Explaining how Wikipedia deals with credibility to university students: the case of Wikipedia in the Basque language. *Journal of Information Communication and Ethics in Society*, *22*(1), 159–173. https://doi.org/10.1108/jices-08-2023-0104

Blikstad-Balas, M. (2016). "You get what you need": A study of students' attitudes towards using Wikipedia when doing school assignments. *Scandinavian Journal of Educational Research*, *60*(6), 594–608. https://doi.org/10.1080/00313831.2015.1066428

Bröcher, L., Gredel, E., Herzberg, L., Linthe, M., & van Dijk, Z. (2023). Linguistische Wikipedistik und Wikipedaktik Revisited (2018–2023). In Michael Beißwenger, Eva Gredel, Lothar Lemnitzer, Roman Schneider (Ed.), *Korpusgestützte Sprachanalyse: Grundlagen, Anwendungen und Analysen,* 311–327. Gunter Narr Verlag.

Cardoso, T., & Pestana, F. (2020). A Wikipédia como prática e recurso educacional aberto na formação docente. *Revista Tempos E Espaços Em Educação*, *13*(32), 1–16. https://doi.org/10.20952/revtee.v13i32.14275

Christensen, T. B. (2015). Wikipedia as a tool for 21st century teaching and learning. *International Journal for Digital Society*, *6*(2), 1042–1047. https://doi.org/10.20533/ijds.2040.2570.2015.0128

Davis, L. L., Sigalov, S. E., Maljković, F., & Peschanski, J. A. (2023). The Wikipedia education program as open educational practice: Global stories. In J. Olivier & A. Rambow (Eds.), *Open Educational Resources in Higher Education. Future Education and Learning Spaces*. (pp. 251–278). Springer Nature Singapore. https://doi.org/10.1007/978-981-19-8590-4_12

Dudić, D., Ratković, N., Firaunović, I., & Krčadinac, O. (2024). Improving trust in information sources: Serbian Wikipedia use case. *JITA - Journal of Information Technology and Applications (Banja Luka) - APEIRON*, *24*(2). https://doi.org/10.7251/jit2402160d

Dúo-Terrón, P., Moreno-Guerrero, A.-J., & Marín-Marín, J.-A. (2022). ICT motivation in sixth-grade students in pandemic times—the influence of gender and age. *Education Sciences*, *12*(3), 183. https://doi.org/10.3390/educsci12030183

Evenstein Sigalov, S., & Nachmias, R. (2023). Investigating the potential of the semantic web for education: Exploring Wikidata as a learning platform. *Education and Information Technologies, 28*, 12565–12614. https://doi.org/10.1007/s10639-023-11664-1

Evenstein Sigalov, S., Cohen, A., & Nachmias, R. (2024). Transforming higher education: a decade of integrating wikipedia and wikidata for literacy enhancement and social impact. *Journal of Computers in Education*. https://doi.org/10.1007/s40692-024-00334-x

García-Delgado Giménez, B., y Pinto Tortosa, A. J. (2024). ¿Es Wikipedia una fuente académica fiable? Experiencia en la Universidad Europea durante la COVID-19. En P. P. Marín-Dueñas, E. Ruiz Callejón y F. J. Cristófol Rodríguez. Herramientas y técnicas para la optimización del proceso educativo (pp. 137-146). Marcial Pons. http://hdl.handle.net/11268/13284

Iribas Pardo, H., Errazkin Vicente, A., & Torrealday Gallareta, A. (2022). Lanaldia murrizteko proposamena: langile-klasearen garaipena ala burgesiaren egokitzapena? *Uztaro Giza Eta Gizarte-Zientzien Aldizkaria*, *123*, 35–57. https://doi.org/10.26876/uztaro.123.2022.3

Johnson, I., Lemmerich, F., Sáez-Trumper, D., West, R., Strohmaier, M., & Zia, L. (2021, May). Global gender differences in Wikipedia readership. In *Proceedings of the International AAAI Conference on Web and Social Media,* 15, 254-265. https://ojs.aaai.org/index.php/ICWSM/article/view/18058/17861

Katz, B. M., & McSweeney, M. (1980). A Multivariate Kruskal-Wallis Test With Post Hoc Procedures. *Multivariate Behavioral Research, 15*(3), 281–297. https://doi.org/10.1207/s15327906mbr1503_4

Malik, A., Rafiq, M., & Mahmood, K. (2023). Wikipedia and academia: University faculty patterns of use and perceptions of credibility. *Journal of Librarianship and Information Science, 57*(1), 132-142. https://doi.org/10.1177/09610006231190652 (Original work published 2025)

Maljković, F. (2015). Report on gender structure on Serbian Wikipedia (in Serbian). Wikimedia Commons. https://commons.wikimedia.org/wiki/File:Rodna_struktura_na_Vikipediji_na_srpskom_jeziku.pdf

McDowell, Z.J., & Vetter, M.A. (2021). Wikipedia and the Representation of Reality (1st ed.). Routledge. https://doi.org/10.4324/9781003094081

Minguillón, J., Meneses, J., Aibar, E., Ferran-Ferrer, N., & Fàbregues, S. (2021). Exploring the gender gap in the Spanish Wikipedia: Differences in engagement and editing practices. In I. Kryven (Ed.), PLOS ONE (Vol. 16, Issue 2, p. e0246702). Public Library of Science (PLoS). https://doi.org/10.1371/journal.pone.0246702

Mothe, J. & Sahut, G. (2018). How trust in Wikipedia evolves: a survey of students aged 11 to 25. *Information Research*, *23*(1), paper 783. http://InformationR.net/ir/23-1/paper783.html

Pavlović, D., Petrović, Z. S., & Mamutović, A. (2017). Wikipedia – from the popular source of information to the pedagogical tool. *International Journal of Social Sciences and Educational Studies*, *4*(3). https://doi.org/10.23918/ijsses.v4i3p36

Petrucco, C. (2018). Wikipedia in university courses: teaching practices and educational benefits. *Research on Education and Media*, *10*(2), 10–16. https://doi.org/10.1515/rem-2018-0010

Ratković, N. & Rudinac, N. (2023). Promoting Equity in Access to Open Knowledge: An Example of the Wikipedia Educational Program. In P. Escudeiro, N. Escudeiro, & O. Bernardes (Eds.), *Handbook of Research on Implementing Inclusive Educational Models and Technologies for Equity and Diversity* (pp. 130-155). IGI Global Scientific Publishing. https://doi.org/10.4018/979-8-3693-0453-2.ch007

Reinsalu, R., Vija, M., Org, A., Siiman, A., & Remmik, M. (2023). With or without Wikipedia? Integrating Wikipedia into the teaching process in Estonian general education schools. *Education Sciences*, *13*(6), 583. https://doi.org/10.3390/educsci13060583

Remmik, M., Siiman, A., Reinsalu, R., Vija, M., & Org, A. (2024). Using Wikipedia to develop 21st century skills: Perspectives from general education students. *Education Sciences*, *14*(1), 101. https://doi.org/10.3390/educsci14010101

Similarweb (2025) Top websites ranking. Similarweb Ltd. Retrieved March 9, 2025. https://www.similarweb.com/top-websites

Soler-Adillon, J., Pavlovic, D., & Freixa, P. (2018). Wikipedia in higher education: Changes in perceived value through content contribution. *Comunicar*, *26*(54), 39–48. [in Spanish] https://doi.org/10.3916/c54-2018-04

Stakić, Đ., Tasić, M., Stanković, M., & Bogdanović, M. (2021a). Students' attitudes towards the use of Wikipedia: A teaching tool and a way to modernize teaching. Área Abierta, *21*(2), 309–325. https://doi.org/10.5209/arab.72760

Stakić, Đ. S., Popović, A. K., & Krinulović, O. (2021b). Wiki-librarian: A project to train librarians and students to work with Wikipedia. *Infotheca - Journal for Digital Humanities*, *21*(1), 55–72. https://doi.org/10.18485/infotheca.2021.21.1.3

Sunvy, A. S., & Reza, R. B. (2023). Students' perception of Wikipedia as an academic information source. *Indonesian Journal Of Educational Research and Review*, *6*(1), 134–147. https://doi.org/10.23887/ijerr.v6i1.57572

Wikimedia Education - Serbia. (n.d.). Wikimedia.org. Retrieved March 26, 2025. https://outreach.wikimedia.org/wiki/Education/Countries/Serbia

Zou, D., Xie, H., Wang, F. L., & Kwan, R. (2020). Flipped learning with Wikipedia in higher education. *Studies in Higher Education*, *45*(5), 1026–1045. https://doi.org/10.1080/03075079.2020.1750195